

WHAT IS CLAIMED IS:

1. A honeycomb structure comprising: partition walls arranged so as to form a plurality of cells extending to an other-end portion from a one-end portion through an axial direction, wherein the partition walls having
5 different heights in the axial direction are arranged in the one-end portion.

2. The honeycomb structure according to claim 1,
10 comprising: a plurality of partition walls arranged in parallel with an X-direction in a section vertical to the axial direction of the honeycomb structure, wherein the plurality of partition walls include a partition wall disposed in such a manner that the height of the partition
15 wall in the axial direction is different from the heights of adjacent partition walls on opposite sides in the one-end portion.

3. The honeycomb structure according to claim 2,
20 further comprising: a plurality of partition walls arranged in parallel with a Y-direction in a section vertical to the axial direction of the honeycomb structure, wherein the plurality of partition walls include a partition wall disposed in such a manner that the height of the partition
25 wall in the axial direction is different from the heights of adjacent partition walls on opposite sides in the one-end portion.

4. The honeycomb structure according to claim 1, comprising: partition walls having different heights in the axial direction in the other-end portion.

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5. The honeycomb structure according to claim 1, comprising: the partition wall including a portion whose thickness is reduced toward a tip in the end portion.

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6. A honeycomb structure comprising: a plurality of partition walls arranged in parallel with an X-direction and a plurality of partition walls arranged in parallel with a Y-direction so as to form a plurality of cells extending to an other-end portion from a one-end portion

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through an axial direction; and plugging portions for plugging open end portions of predetermined cells among the plurality of cells in either end portion, wherein the plugging portions in the one-end portion comprise a convex plugging portion including a protruding portion protruding

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from any of surrounding partition walls in the axial direction, and a concave plugging portion dented from the convex plugging portion in the axial direction, and

intersecting portions of surrounding partition walls of one cell which does not include any plugging portion contact

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one or more cells including the convex plugging portions and one or more cells including the concave plugging portion for each intersecting portion in the one-end

portion.

7. The honeycomb structure according to claim 6,
wherein the plugging portion comprises a protruding portion
5 protruding from any of the surrounding partition walls in
the axial direction.

8. The honeycomb structure according to claim 6,
wherein the protruding portion of the convex plugging
10 portion comprises a portion whose width is reduced toward a
tip from a cell side.

9. The honeycomb structure according to claim 6,
wherein a catalyst component is carried by the surface of
15 the plugging portion.

10. The honeycomb structure according to claim 6,
wherein the plugging portion comprises a convex plugging
portion including a protruding portion protruding from any
20 of the surrounding partition walls in the axial direction,
and a concave plugging portion dented from the convex
plugging portion in the axial direction in the other-end
portion.

25 11. The honeycomb structure according to claim 6,
wherein any of the surrounding partition walls of one cell
which does not include any plugging portion comprises a

portion whose thickness is reduced toward a tip so as to enlarge an opening of the cell in the one-end portion.

12. The honeycomb structure according to claim 11, wherein the convex plugging portion is disposed in contact with the portion of the partition wall whose thickness is reduced toward the tip.

13. The honeycomb structure according to claim 1, wherein the partition wall comprises pores and is porous, and the surface of the partition wall and/or the pore surface inside the partition wall carries a catalyst component.

14. A discharge fluid purification system comprising: a purification section for purifying a discharge fluid; and an introductory section for introducing the discharge fluid into the purification section, wherein the purification section comprises the honeycomb structure comprising partition walls arranged so as to form a plurality of cells extending to an other-end portion from a one-end portion through an axial direction, wherein the partition walls having different heights in the axial direction are arranged in the one-end portion, and a one-end portion of the honeycomb structure is disposed on an upstream side.

15. A discharge fluid purification system comprising: a purification section for purifying a discharge fluid; and an introductory section for
5 introducing the discharge fluid into the purification section,

wherein the purification section comprises the honeycomb structure comprising a plurality of partition walls arranged in parallel with an X-direction and a plurality of
10 partition walls arranged in parallel with a Y-direction so as to form a plurality of cells extending to an other-end portion from a one-end portion through an axial direction; and plugging portions for plugging open end portions of predetermined cells among the plurality of cells in either
15 end portion, wherein the plugging portions in the one-end portion comprise a convex plugging portion including a protruding portion protruding from any of surrounding partition walls in the axial direction, and a concave plugging portion dented from the convex plugging portion in
20 the axial direction, and intersecting portions of surrounding partition walls of one cell which does not include any plugging portion contact one or more cells including the convex plugging portions and one or more cells including the concave plugging portion for each
25 intersecting portion in the one-end portion, and a one-end portion of the honeycomb structure is disposed on an upstream side.

16. A method of manufacturing a honeycomb structure, comprising: a step of processing/removing a partition wall along a longitudinal direction of the partition wall in a one-end portion of a honeycomb body comprising partition walls arranged so as to form a plurality of cells extending to an other-end portion from the one-end portion through an axial direction.

17. The method of manufacturing the honeycomb structure according to claim 16, comprising: a step of processing/removing the plurality of partition walls every other partition wall along the longitudinal direction of the partition wall in the one-end portion of the honeycomb body comprising the plurality of partition walls arranged in parallel with an X-direction in a section vertical to the axial direction.

18. The method of manufacturing the honeycomb structure according to claim 17, comprising: a step of processing/removing the plurality of partition walls every other partition wall along the longitudinal direction of the partition wall in the one-end portion of the honeycomb body further comprising the partition walls arranged in parallel with a Y-direction in a section vertical to the axial direction.

19. The method of manufacturing the honeycomb structure according to claim 16, comprising: a step of processing/removing the partition walls along the longitudinal direction of the partition wall in the other-
5 end portion.

20. A method of manufacturing a honeycomb structure comprising: a step of processing/removing two adjacent partition walls among a plurality of partition
10 walls arranged in parallel with an X-direction and a plugging portion between the partition walls along a longitudinal direction of the partition wall in a one-end portion of a honeycomb body comprising the plurality of partition walls arranged in parallel with the X-direction
15 and a plurality of partition walls arranged in parallel with a Y-direction so as to form a plurality of cells extending to an other-end portion from a one-end portion through an axial direction, and plugging portions for plugging open end portions of predetermined cells among the
20 plurality of cells in either end portion.

21. The method of manufacturing the honeycomb structure according to claim 17, further comprising: a step of processing/removing two adjacent partition walls among
25 the plurality of partition walls arranged in parallel with the Y-direction and the plugging portion between the partition walls along the longitudinal direction of the

partition wall in the one-end portion of the honeycomb body.

22. The method of manufacturing the honeycomb structure according to claim 20, wherein the processing/removing step comprises: a step of processing/removing the honeycomb body broader on an end portion side than on an inner side of the axial direction of the honeycomb body.

23. The method of manufacturing the honeycomb structure according to claim 20, comprising: a step of processing/removing two adjacent partition walls among the plurality of partition walls arranged in parallel with the X or Y-direction and the plugging portion between the partition walls along the longitudinal direction of the partition wall in the other-end portion.

24. The method of manufacturing the honeycomb structure according to claim 16, wherein the honeycomb body is a fired body.

25. The method of manufacturing the honeycomb structure according to claim 16, wherein the honeycomb body is a non-fired body, and a firing step is performed after the processing/removing step.